REMARKS/ARGUMENTS

Claims 2-4, 6-10, 12-18, 20-28 and 30-41 remain in the application. In the Office Action, mailed March 21, 2007, all of these claims were rejected over the Mandhyan et al. U.S. Patent Publication No. US 2004/0028023 A1. Reconsideration of the rejections of the claims is respectfully requested in view of the following arguments. It is noted with appreciation that the rejections of the claims in the previous Office Action have been withdrawn.

Claim Rejections - 35 U.S.C. § 103

Claims 2-4, 6-10, 12-18, 20-28, 30, 32-41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Mandhyan et al. U.S. Patent Publication No. US 2004/0028023 A1 (Mandhyan et al. '023). This rejection is respectfully traversed.

The Mandhyan et al. '023 reference relates to an ad-hoc network of sensors which is based on network protocols that produce a self-organizing and self-healing network. More specifically, the network automatically determines optimum routes for network traffic and finds alternate routes when problems are encountered.

Mandhyan et al. '023 avers that there is no requirement for skilled network technicians for the Mandhyan et al. ad hoc network. The architecture of Mandhyan et al. '023 is said to extend the range of a control node and the ability to deliver to a rapidly growing emerging market in low-power wireless devices. The basic function of the Mandhyan et al. '023 network sensors is to collect sensor measurements and to route the sensor data (in great part from moving objects, such as in a military application, where nodes on the network are mobile and may come into and out of service as a result of one or more of the nodes being monitored being brought into service or eliminated) to an appropriate end node for further processing, for example, to a control node or to a control node on the receiving end of a gateway node. The advantage of the Mandhyan et al. '023 sensor network is that it can be deployed in an arbitrary manner and will establish necessary communications, routing and configuration mechanisms automatically without human intervention. The sensor network is said to be self-organizing, thereby allowing for easy, rapid deployment that does not require specific placement of the nodes or extensive

pre-configuration of network management activities. In particular, the sensor network is adapted for complex military and commercial environments and/or implementations where the network configuration changes dynamically due to nodes being added or subtracted from the network.

Mandhyan et al. '023 contrasts its ad-hoc system with sensor networks that are manually configured to inform a network controller of the addition, deletion and/or failure of a network device. Mandhyan et al. '023 discloses that this type of network results in a complex configuration procedure that must be executed during installation of a network device, requiring a skilled technician. See Mandhyan et al. '023, paragraph 4.

Thus, the Mandhyan et al. '023 ad-hoc network is dynamic in nature in that the sensor nodes determine the route automatically due to certain protocols for sending sensor information to a control node.

Mandhyan et al. '023 discloses in paragraph 26 that control nodes will be the final or ultimate nodes in a sequence of nodes along which sensor data has traversed. Control nodes may have the capability to set and get sensor node parameters. Control nodes may use the data obtained from sensor nodes to build and store a map of the deployed sensor nodes. Control nodes may also maintain a record of the operating characteristics of each sensor node. In addition, the control nodes may maintain the identity of the sensor node, the type of the sensor (acoustic or seismic, etc.), the mean time between messages received and an estimate of the round-trip delay from the control node to the sensor node.

In paragraph 44, Mandhyan et al. '023 discloses that during the process of communicating the consumer presence information, i.e., consumer location information, each intermediate node will record the appropriate route (multiple routes are possible) to the consumer nodes.

In paragraph 53, Mandhyan et al. '023 discloses that the sensor node sends information to the control node establishing contact with a control node. The sensor node sends device characteristics such as configurable parameters and power capacity. In this phase, all intermediate nodes that relay sensor credentials to the control node will establish a route from the control node to the sensor node. At this point, the control node has a route to the sensor

node. The sensor node then moves to a wait state where it is ready to transmit data to the control node.

MANDHYAN ET AL. '023 IS NOT ANALOGOUS ART

The Mandhyan et al. '023 reference is not an appropriate reference against the claims in this application. In particular, Mandhyan et al. '023 is not analogous art because it does not relate to the subject matter of Applicants invention, nor is it reasonably pertinent to the particular problem with which the inventor was concerned. *In re* Oetiker 977 F2d. 1443, 1446, 24 USPQ 2d. 1443, 1445 (Fed Cir. 1992). "A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering the problem." *Lang Laboratories Inc. vs. Toshiba Corp.* 993 F.2d. 858, 864, 26USPQ 2d 1767 (Fed Cir. 1993). While Patent Office classification is some evidence of analogy, the similarities and differences in structure and function of the inventions disclosed in the references carry far greater weight. *In re* Clay, 966 F.2d 656, 23 USPQ 2d. (BNA) 1058 (Fed. Cir. 1992).

The first requirement of analogous art at has not been met. The Mandhyan et al. '023 reference does not relate to Applicant's claimed invention. The subject matter of Applicants invention relates to collecting oil and gas production data from geographically spaced wells in remote areas. There is no disclosure or suggestion in the Mandhyan et al. '023 reference of collecting oil and gas production data from geographically spaced wells in remote areas.

The second requirement of *Oetiker* has also not been met. The Mandhyan et al. '023 reference is not reasonably pertinent to the problem with which Applicant was concerned. The problem solved by Applicants invention is collecting oil and gas data from geographically spaced wells which are static. This well data has previously been (and still is to a large extent in many areas) collected by people who traveled to the wells and read the production data on a periodic basis, perhaps once or twice a week. Mandhyan et al. '023 is not faced with this problem. Mandhyan et al. '023 is faced with a problem of a dynamic sensor network for use in military and commercial environments and/or implementations where the network configuration changes dynamically due to nodes being added or subtracted from the network and also from

movement of the sensors, for example in a battlefield situation. Further, the Mandhyan et al. '023 ad-hoc network is a very expensive and very sophisticated and would not be selected by a person skilled in the art for monitoring and/or collecting oil and gas well data. The ad -hoc system of Mandhyan et al. '023 requires expensive and sophisticated equipment which has relatively high power usage which would not be suitable for geographically spaced remote gas and oil wells where there typically is no electrical power other than what can be generated with solar cells and the cost of this type of equipment may not be cost effective. It is therefore submitted that Mandhyan et al. '023 is not analogous art and is not appropriate for applying against Applicants claims in a rejection under 35 U.S.C. § 103.

MANDHYAN ET AL. '023 DOES NOT MEET THE CLAIMED INVENTION

Even if the Mandhyan et al. '023 reference could be considered as prior art, it still does not meet Applicants claimed invention for the following reasons.

Independent claim 10 distinguishes over t Mandhyan et al. '023 in calling for a system for collecting and storing well data from geographically spaced wells. This concept is not disclosed or suggested by Mandhyan et al. '023.

Further, claim 10 calls for a central store that is programmed to encoded data packets to and from well monitors with an address that is unique to each of the well monitors and *with a predefined path*. Mandhyan et al. '023 does not disclose well monitors and does not disclose a central store that is programmed to encode data packets to and from well monitors with a predefined path. In fact, Mandhyan et al. '023 reference actually teaches against the concept because Mandhyan et al. '023 clearly distinguishes the ad-hoc networks from the manually programmed networks that require a manual configuration of network paths. See, for example, Mandhyan et al. '023 reference, paragraphs 4-6. Mandhyan et al. '023 distinguishes over these manually programmed network systems as a system which is a self organizing and self-healing network. A central store that is programmed to encode data packets with a predefined path is not a self organizing and self-healing network as disclosed in Mandhyan et al. '023.

Still further, Mandhyan et al. '023 does not disclose a plurality of well monitors each of which is adapted to be associated with a gas or oil well and each of which is programmed to record oil and gas well production data at a given oil and well location as required by claim 11. As a result, Mandhyan et al. '023 can not perform the function of transmitting oil and gas well production data to a central data store by hopping from well monitor to well monitor along a predefined path to a data transmission processor which can then, in turn, transmit the oil and gas well production data to the central store for storage and analysis.

Claims 2-4, 6-10 depend from claim 10 and define over Mandhyan et al. '023 in at least the same way as claim 10. Further, claim 2 further defines over Mandhyan et al. '023 in defining the central data store as having a computer processor that is programmed to make selective data available to one or more remote users under predetermined conditions. The Examiner's unsupported representation of obviousness falls far short of the standard for meeting this claim.

Still further, claim 4, which depends from claim 2, and claim 9 which depends from claim 10, call for the data store computer processor to be programmed to retrieve data from one or more well monitors upon request from one or more remote users under certain conditions. This concept is also not disclosed in Mandhyan et al. '023.

Further, claim 6 calls for the well monitors to be programmed to transmit data over radio waves in a 900 MHz frequency band. This concept is not disclosed or suggested by Mandhyan et al. '023. Still further, claim 7 calls for each of the well monitors to have an integrated communications and control unit that comprises a radio module and central processing unit that run solely on transistor-logic level voltages. The Mandhyan et al. '023 does not disclose this concept.

Still further, Mandhyan et al. '023 does not disclose a recorder controller adapted to convert a voltage signal of oxygen content in a gas line into a signal representative of the oxygen content in the gas line, a transmitter connected to the recorder controller for transmitting the signal representative of the oxygen content of the gas line to the central data store through a wireless signal that hops along the predetermined path that includes at least two of the well

monitors and the data collection transmission processor as required by claim 8. This concept is wholly missing from the Mandhyan et al. '023 reference.

In view of the foregoing it is clear that that claims 2-4 and 6-10 patentably define over Mandhyan et al. '023 reference.

Claims 12-18 depend from claim 33 relate to a method for communicating between geographically spaced wells and a central data store at a remote location with respect to geographically spaced wells. Mandhyan et al. '023 does not disclose this concept. Further, claim 33 calls for encoding a data request packet with an address unique to a destination well monitor at a destination well and *with a predefined path* that includes a well monitor at each of the at least two geographically spaced wells. The Mandhyan et al. '023 reference has nothing to do with encoding a data request package to well monitors and has no relationship with a predefined path. The Mandhyan et al. '023 reference does not encode data request packets with a predefined path. A predefined path is precisely what Mandhyan et al. '023 states it does not do in paragraphs 4-6. The Examiner refers to paragraph 26 in Mandhyan et al. '023 as having a control node with means to maintain a map of sensor location. Sensor location is not a predefined path. Location is a geographic coordinate, for example. There is simply no conception in Mandhyan et al. '023 of the use of a predefined path in its ad hoc system as required by Applicants claim 33.

Claim 33 further calls for transferring the encoded data request packet from the field station to a first well monitor at a first well in the predetermined path via radio waves, determining if the first well monitor is a destination well monitor and if the first well monitor is not the destination well monitor, hopping the request data packet along the predefined path along the radio waves until the request data packet reaches the destination well monitor. Whereas Mandhyan et al. '023 does disclose hopping data through a self determining path via radio waves to a control node, it does not disclose hopping a request data packet along a predefined path. For all these reasons, it is clear that claim 33 and claims dependent therefrom patently distinguish over the Mandhyan et al. '023 reference.

Turning to the claims which are dependent on the claim 33, these claims define the following acts which are not disclosed in Mandhyan et al. '023:

- Sending a response packet from the destination well monitor to the field station along the predefined path but in the opposite direction along the predefined path; (claims 12-15)
- Sending of the data request packet from the central data store to the field station and to each of a plurality of geographically spaced well monitors; (claims 17 and 18)
- Transmitting a request from a remote user to the central data store for a data packet from the destination well monitor and sending the data request packet from the central store to a field station responsive to the request of a remote user. (claim18)

In view of the foregoing, it is submitted that claims 33 and 12-18 patentably distinguish over the Mandhyan et al. '023 reference.

Claims 20-28 and 30 and 32 depend from claim 31 and relate to a method for gathering operating data from a plurality of geographically spaced oil and gas producing wells. This concept is not disclosed in Mandhyan et al. '023l. Nowhere does Mandhyan et al. '023 disclose gathering operating data from a plurality of geographically spaced oil and gas producing wells. Further, the method of claim 31 calls for assigning to each of the wells a unique address and assigning to each well at least one well hopping path between each well in the central data store. Nowhere in the Mandhyan et al. '023 reference is there a disclosure of assigning to each well at least one well hopping path between each well and the central data store. Contrary to the Examiner's representation, sensor nodes are detected and the system establishes communication routing a configuration mechanism automatically without human intervention. This feature is key to the Mandhyan et al. '023 ad-hoc network. See Mandhyan et al. '023, paragraph 4-6 and 21. Assigning unique well addresses and a well hopping path between a well and a central store is not within the scope of the Mandhyan et al. '023 reference. The act of assigning is significantly different than deploying a sensor network in an arbitrary manner and establishing necessary communication routing into a configuration mechanism automatically without human intervention. This automatic routing a configuration is not the step of assigning something. It is

automatically done. The act of assigning something means that it is fixed it does not change with changing conditions. As a result, Mandhyan et al. '023 does not also disclose the act of wireless transmission of well production data from a geographically spaced oil or gas production well along the at least one well hopping path that has been assigned to the well. Therefore, claim 31 and dependent claims 20-28 and 30 patentably defined over Mandhyan et al. '023.

Further, with respect to claims 20-28 and 30-32, these claims further distinguish over Mandhyan et al. '023 in the following manner:

- correlating the transmitted data according to the geographically spaced wells at the central data store storage zone; (claim 21)
- accessing selected portions of the stored data in the central data storage zone from a site remote therefrom; (claim 22)
- polling at least one well prior to the gathering act and the gathering act is responsive to the polling step; (claims 23 and 24)
- polling all of the wells and the gathering step includes gathering well production data from each of the polled wells; (claims 25 to 27)
- the wireless transmission is carried out by radio waves that are in the 900 MHz frequency band; (claim 30)
- detecting the level of oxygen in a production gas stream from one or more of the wells; wherein the gathering step includes gathering data related to the detected level of oxygen in the production gas stream from one or more of the wells. (claim 32)

In particular, as set forth above with respect to claim 8, Mandhyan et al. '023 discloses nothing about detecting the level of oxygen in a production gas stream from one or more wells. Nor does it disclose the step of gathering data related to the detected level of oxygen in the production gas stream from one or more wells.

In view of the foregoing, it is apparent that claims 20-28 and 30-32 patentably define over the Mandhyan et al. '023 reference.

Claims 34-41 relate to a system for collecting and storing well data from a plurality of geographically spaced oil and gas wells and set forth a central data store positioned at a remote

location from a plurality of geographically spaced wells and adapted to receive and store data from a distant source through a predefined communication path. Mandhyan et al. '023 does not disclose anything about a plurality of geographically spaced wells and a central data store that is adapted to receive and store data from a distant source through a predefined communication path. Further, these claims require a computer processor at a central store that is programmed to encode data packets to and from well monitors with an address unique to each of the well monitors and *with a predefined path*. Mandhyan et al. '023 discloses neither a computer processor that is programmed to encode data packets to and from well monitor nor does it disclose data packets that are encoded with an address unique to each of the wells and with a predefined path.

Claims 34-41 further require well monitors to be programmed to receive wireless data packets from other of well monitors and, if in the predefined path, transmit to other of the well monitors and to a data transmission processor and receive data packets that have a destination address different from the address of the respective well monitor. Mandhyan et al. '023 does not disclose well monitors and further does not disclose well monitors which are programmed to receive wireless data packets from other well monitors and transmit to other well monitors and to a data transmission processor the received data packets that have a destination address different from the address of the respective well monitor. Although Mandhyan et al. '023 does disclose consumer nodes, intermediate nodes, gateway nodes and an Internet gateway, Mandhyan et al. '023 does not relate to well monitors and the transmission of well data to a central store.

Finally, Mandhyan et al. '023 does not disclose the hopping from well monitor to well monitor along a predefined path to a data collector and transmission processor as required by claims 34-41. Although Mandhyan et al. '023 discloses an ad-hoc network which includes the hopping of data from node to node, it does not deal with the collection and monitoring of well production data as required by these claims.

Claims 35-41 depend from claim 34 and define over the Mandhyan et al. '023 reference in the same manner as claim 34. In addition, these dependent claims have the following features which further distinguish the claims over Mandhyan et al. '023:

- the computer processor in the central data store is programmed to make selected data available to one of more remote users under predetermined conditions; (claim 35)
- the data store computer processor is programmed to receive data from one or more well monitors upon request; (claims 35 and 36)
- the computer processor is programmed to retrieve data from one or more well monitors upon request from one or more remote users under certain predetermined conditions; (claims 37 and 41)
- the well monitors are programmed to transmitted data over radio waves in a 900 MHz frequency band; (claim 38)
- each of the well monitors has an integrated communications and control unit that comprises a radio module and a central processing unit that run solely on transistor-transistor logic (TTL) level voltages; (claim 39)
- a recorder controller adapted to convert a voltage representative of the oxygen content in a gas transmission line into a signal representative of the oxygen content in the gas transmission line, a transmitter connected to the recorded controller for transmitting a signal representative of the oxygen content of the gas in the gas transmission line to the central data store through a wireless signal that hops along the predefined path that includes at least two of the well monitors and the data collection and transmission processor. (claim 40)

In view of the foregoing, Applicant submits that claims 2-4, 6-10, 12-18, 20, 30, 32-41 are not unpatentable over the Mandhyan et al. '023 reference under 35 U.S.C. § 103(a).

Claim rejections - 35 U.S.C. §102

Claim 31 has been rejected under 35 U.S.C. § 102(e) as being anticipated by the Mandhyan et al. '023. This rejection is respectfully traversed.

As the Examiner doubtless understands, a rejection under 35 U.S.C. § 102 requires that the cited references disclosed each and every limitation in the claims is so rejected. This

rejection must fail because Mandhyan et al. '023 does not disclose each and every limitation in claim 31.

Claim 31 relates to a method for gathering operating data from a plurality of geographically spaced oil and gas producing wells. Nowhere in Mandhyan et al. '023 is there a disclosure of gathering operating data from a plurality of geographically spaced oil and gas producing wells. The Examiner has cited no reference to Mandhyan et al. '023 to meet this language in the preamble. This language is a limitation in the claims because the subject matter is interwoven throughout the claims. Further, the Examiner does not even mention in the rejection of claim 31 any disclosure in Mandhyan et al. '023 related to gathering operating data from a plurality of geographically spaced oil or gas producing wells. On its face, the rejection must fail.

This method claim is not an apparatus claim where the use of the apparatus is irrelevant if the structure of the apparatus is disclosed in a prior art reference. The Examiner simply refers to structure in the Mandhyan et al. '023 reference to meet various methods steps in claim 31. Methods and apparatus are two distinct statutory classes of invention. A method claim must be examined as a method claim and not as an apparatus claim.

This method claim calls for the steps of gathering well production data and transmitting the gathered well production data. Nowhere in the Mandhyan et al. '023 reference is there a disclosure of gathering well production data and transmitting gathered well production data to a central data storage zone. For these reasons, the rejection under 35 U.S.C. § 102 over the Mandhyan et al. '023 reference fails.

Perhaps more importantly is the step of assigning to each of the wells a unique address and *assigning to each well at least one well hopping path between each well and a central data store zone*. Nowhere in Mandhyan et al. '023 is there a disclosure of assigning to a well a unique address and nowhere is there in Mandhyan et al. '023 a disclosure of the step of assigning to each well at least one well hopping path between each well and a central data store.

The Examiner refers paragraph 23, 26, and 70 as support for the step of assigning a unique address to each sensor and one well hopping path between each well and the central door

store facility. The Examiner's reliance on these particular paragraphs is misplaced. Paragraph 23 of Mandhyan et al. '023 discloses that a sensor node may maintain a record of the operating characteristics of the control node. Operating characteristics are not a well hopping path and maintaining operating characteristics in not the act of assigning a well hopping path. Maintaining and assigning are different acts and are not synonymous. Paragraph 26 discloses that control nodes may have the capability to set and get sensor node parameters and that control nodes may use the data obtained from sensor nodes to build and store a map of the deployed sensor nodes and that control nodes may also maintain a record of the operating characteristics of each sensor node. These acts cannot be construed as the act of "assigning" because they are simply acts of collecting. If one walks around the Patent Office and records the location of each examiner and maintains a record of these locations, has he or she assigned a path to each of the Examiners' offices? Applicant submits that the act of recording data is not the act of assigning.

Paragraph 70 of Mandhyan et al. '023 refers to the establishment of a route from a sensor or relay to a control node, which information is passed on to immediate neighbors upon receiving route request messages. The ad hoc establishment of a route is not the act of assigning a route between a sensor and a control node. If the person that records the location of each examiner office in the Patent Office records the path that he or she follows while collecting data then records the path that he or she follows in the process of collecting data, has he or she assigned a route to each of the examiner offices? Clearly not. Collecting data is not assigning anything. In order to assign a route, one must evaluate the data and then make a determination as to what to do with it. Those acts are not done by Mandhyan et al. '023.

In short, there is nothing in these three paragraphs that refers to the step of assigning a well hopping path between each well and the central store facility. The establishment step 20 is significantly different than the assigning act in Applicants claim 31. It is quite clear from the content of Mandhyan et al. '023 that the act assigning a unique address and a well hopping path are distinctly different steps than establishing a route as disclosed in Mandhyan et al. '023. This conclusion is abundantly clear from a review of paragraphs 4-6 of Mandhyan et al. '023 which disclose the prior art and paragraph 21 of the Mandhyan et al. '023 which discloses the

distinction between establishing a route path ad-hoc and manual updating of sensor information as in the prior art. Further, there is no disclosure in any of Mandhyan et al. '023, including paragraphs 23, 26, and 70 thereof, of assigning unique address to a sensor or assigning one hopping path between "each well and the central store facility". Mandhyan et al. '023 has absolutely nothing to do with the well hopping path or collecting the well data.

In view of the foregoing, it is apparent that claim 31 is not anticipated by Mandhyan et al. '023.

In view of the foregoing remarks and amendments it is submitted that all of the claims are in condition for allowance. Early notification of allowability is respectfully requested. The Examiner is reminded that this application is under special handling and prompt attention to this response is respectfully requested.

Acknowledgment of Interview

Applicant wishes to acknowledge the telephone interview between Examiner Edwards and the undersigned attorney on March 6, 2007 with thanks and appreciation. During the course of the interview, Examiner Edwards informed Applicant's attorney that he had found two new references that might be relevant to the claims in this application. Subsequently, Examiner Edwards cited one of the references, the Mandhyan et al. '023 reference, but did not make of record the other reference in his PTO 892 form. Applicant requests that the Examiner make the other reference, the Stepanik U.S. Patent No. U.S. 7,080,544 of record in this application.

Respectfully submitted,

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